CLAIMS:

1. A transceiver including:

an antenna for receiving a first signal and transmitting a second signal;

signal processor means for receiving from the antenna a third signal indicative of the first signal; and

modulator means disposed between the antenna and the signal processor means for providing a fourth signal to the antenna for forming the second signal, the modulator means varying the impedance between the antenna and the signal processor means ~~for providing the antenna with a dual Q factor, the Q factor being high for the first signal and low~~ for the second signal.

2. A transceiver according to claim 1 wherein the transceiver is a transponder and the first and second signals are modulated at a first frequency and a second frequency respectively, ~~wherein~~ the first and second frequencies are different.

3. A transceiver according to claim 2 wherein the transponder is passive and the signal processor means includes processing circuitry and power storage means, wherein some of the power provided by the third signal is stored in the power storage means for subsequently powering the transponder.

4. A transceiver according to claim 3 wherein the modulator means varies the impedance between the antenna and the signal processor means between a high and a low value to effect a high and a low Q factor for signals respectively received by and transmitted from the antenna.

5. A transceiver according to claim 4 wherein the impedance is varied between the high and the low value at a rate greater than the DC slew rate for the third signal.

6. A transceiver according to claim 5 wherein the impedance is a resistance.

7. A transceiver according to any one of the preceding claims wherein the antenna is a coil which is tuned by a capacitor.

8. A transceiver according to any one of the preceding claims wherein the voltage across the antenna is modulated or varied in a predetermined manner to generate the second signal.

9. A transceiver according to claim 8 wherein the modulation or variation in antenna voltage corresponds to a proportional variation in the antenna current.

10. A transceiver according to claim 9 wherein the modulator means varies a low impedance which is disposed in series between the antenna and the signal processor means to cause a variation in the voltage across the antenna.

11. A transceiver according to claim 10 wherein the low impedance is less than 10% of the total load impedance seen by the antenna.

12. A transceiver according to claim 10 or claim 11 wherein the impedance is modulated with an RF sub-carrier and data is modulated onto the sub-carrier for transmission.

13. A method for operating a transceiver including the steps of:

providing an antenna for receiving a first signal and transmitting a second signal;

providing signal processor means for receiving from the antenna a third signal indicative ~~of~~ the first signal;

providing a fourth signal to the antenna ~~for forming~~ the second signal; and

varying the impedance between the antenna and signal processor means ~~for providing the antenna with a dual~~ Q factor, the Q factor being high for the first signal

and low for the second signal.

14. A passive transponder including:

an antenna for receiving and transmitting a first signal and a second signal respectively;

signal processor means for: receiving a third signal from the antenna which is derived from the first signal; and providing a fourth signal derived from the third signal;

power storage means in parallel with the signal processor means for absorbing some of the power of the third signal, the absorbed power being subsequently used by the transponder;

modulator means disposed between the antenna and the power storage means for selectively varying the impedance therebetween to generate the second signal; and

a mixer for producing a fifth signal by combining the fourth signal with a sub-carrier, the fifth signal being provided to the modulator means.

15. A transponder according to claim 14 wherein the modulator means varies the impedance in accordance with the fifth signal.

16. A transponder according to claim 15 wherein the impedance is a resistance.

17. A transponder according to claim 14 or claim 15 wherein the power storage means includes a capacitor.

18. An antenna for receiving and transmitting a first signal and a second signal respectively, the antenna including:

a tuned coil in which the first signal generates a first current and which supports a second current for generating said second signal; and

modulator means through which said first and second currents flow for providing

said coil with a dual Q factor, the Q factor being high for the first current and low for the second current.

19. An antenna according to claim 18 wherein the first current or a signal derived from the first current is provided to a signal processing means whereby the modulator means varies the impedance between the coil and the processing means.

20. An antenna according to claim 19 wherein the impedance is a resistance which is switched between a predetermined value and zero resistance.

21. A transceiver including:

an antenna for receiving a first signal and transmitting a second signal;

signal processor means for receiving from the antenna a third signal indicative of the first signal; and

modulator means disposed between the antenna and the signal processor means for providing a fourth signal to the antenna ~~for forming~~ the second signal, the modulator means varying the voltage across the antenna in a substantially stepwise manner to affect a variation in the current flowing through the antenna between a low and a high value for allowing transmission of the second signal without substantially affecting the receiving efficiency of the antenna.

22. A transceiver according to claim 21 wherein the first signal includes a carrier signal and the variation of the current between the low and the high value occurs within less than or about one period of the carrier signal.

23. A method for operating a transceiver including the steps of:

providing an antenna for receiving a first signal and transmitting a second signal;

providing signal processor means for receiving from the antenna a third signal

indicative of the first signal;

providing a fourth signal to the antenna for forming the second signal; and

varying the voltage across the antenna in a substantially stepwise manner to affect a variation in the current flowing through the antenna between a low and a high value for allowing transmission of the second signal without substantially effecting the receiving efficiency of the antenna.

24. A transceiver including:

an antenna for receiving a first signal having a first predetermined frequency and, in response thereto, generating a second signal;

receiving circuitry being responsive to the second signal;

tuning circuitry for providing the antenna with a resonant frequency at or about the first predetermined frequency; and

a modulator disposed between the antenna and the tuning circuitry for varying the impedance therebetween such that the second signal generates a third signal in the antenna at a second predetermined frequency and the antenna transmits a fourth signal derived from the third signal.

25. A transceiver according to claim 24 wherein the first and second predetermined frequencies are substantially different.

26. A transceiver according to claim 24 or claim 25 wherein the antenna includes a coil and the tuning circuit includes a capacitor connected in parallel with the coil.

27. A transceiver according to claim 26 wherein the antenna consists of a coil and the tuning circuit consists of a capacitor.

28. A transceiver according to any one of claims 24 to 27 wherein the modulator is

connected in series with the capacitor.

29. A transceiver according to claim 24 wherein the receiving circuitry, in response to the second signal, actuates the modulator to provide the third signal.

30. A transceiver according to claim 29 wherein the third signal is modulated in accordance with a data signal specific to that transceiver.

31. A transceiver according to claim 30 wherein the data signal is stored in the receiving circuitry and selectively provided to the modulator.

32. A transceiver according to claim 31 wherein the second signal is the current generated in the antenna by the first signal.

33. A transceiver according to claim 31 wherein the second signal is the voltage induced across the tuning circuitry by the first signal.

34. A tuned antenna including:

a coil for receiving a first signal having a first predetermined frequency;

a capacitor connected in parallel with the coil for providing the antenna with a resonant frequency at or about the first predetermined frequency; and

a modulator disposed in series with the capacitor for providing a varying impedance such that the second signal generates a third signal in the coil at a second predetermined frequency whereby the coil transmits a fourth signal derived from the third signal.

35. A method for receiving and transmitting a first signal and a fourth signal respectively to and from a transceiver, the method including the steps of:

receiving the first signal with an antenna and, in response thereto, generating a second signal, the first signal having a first predetermined frequency;

providing the second signal to receiving circuitry;

tuning the antenna with tuning circuitry to have a resonant frequency at or about the first predetermined frequency; and

varying the impedance between the antenna and the tuning circuitry such that the second signal generates a third signal in the antenna at a second predetermined frequency and the antenna transmits a fourth signal derived from the third signal.

36. A method for receiving and transmitting a first signal and a fourth signal respectively, the method including the steps of:

receiving the first signal with a coil having a first predetermined frequency;

connecting a capacitor in parallel with the coil for providing the antenna with a resonant frequency at or about the first predetermined frequency;

generating a second signal from the first signal; and

disposing a modulator in series with the capacitor for both providing a varying impedance such that the second signal generates a third signal in the coil at a second predetermined frequency whereby the coil transmits the fourth signal which is derived from the third signal.